

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

HOK-KIN CHOI, ET AL.

Application No.:

Filed:

For: **PREPARATION OF ELECTROLESS
DEPOSITION SOLUTIONS**

Art Group:

Examiner:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure, enclosed is a copy of Information Disclosure Statement by Applicant (form PTO/SB/08), which is being submitted concurrently with the Utility Application. It is respectfully requested that the cited references be considered and that the enclosed copy of PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s). Copies of the references cited on PTO/SB/08 are enclosed herewith.

The submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made in the subject application and is not to be construed as an admission that the information cited in this statement is material to patentability.

Please charge any fees due to Deposit Account 02-2666. A duplicate copy of the Fee Transmittal (PTO/SB/17) is enclosed for this purpose.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: JUNE 26, 2003

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I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Krista Mathieson 6/26/03
Krista Mathieson Date

US Department of Commerce Patent and Trademark Office Form PTO-1449 (Modified)			Atty. Docket No.: 42P16768		Application No.: *****		
			Applicant: Hok-Kin Choi, et al.				
			Filing Date: Concurrently Herewith				
US Patent Documents							
Examiner's Initials		Date	Document Number	Name	Class	Sub- Class	Filing Date
		03/04/86	4,574,094	DeLuca et al.			05/21/84
		03/04/86	4,574,095	Baum et al.			09/19/84
		12/06/88	4,789,648	Chow et al.			10/28/85
		01/16/90	4,894,260	Kumasaka et al.			09/19/88
		01/15/91	4,985,750	Hoshino			09/17/87
		09/29/92	5,151,168	Gilton, et al.			09/24/90
		08/31/93	5,240,497	Shacham et al.			10/08/91
		03/18/97	5,612,254	Mu et al.			06/29/92
		12/09/97	5,695,810	Dubin et al.			11/20/96
		04/14/98	5,739,579	Chiang et al.			09/10/96
		04/06/99	5,891,513	Dubin et al.			01/16/96
		11/28/00	6,153,935	Edelstein et al.			09/30/99
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		01/06/01	6,174,812	Hsiung et al.			06/08/99
		03/06/01	6,197,688	Simpson			02/12/98
		07/10/01	6,258,707 B1	Uzoh			01/07/99
		10/18/01	2,001,030,366	Nakano et al.			03/07/01
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		02/26/02	6,350,687 B1	Avazino et al.			03/18/99
		03/19/02	6,358,832 B1	Edelstein et al.			08/18/00
Foreign Patent Documents							
Examiner's Initials		Date	Document Number	Country	Class	Sub- Class	Translation
		11/25/87	62-270778	Japan			Yes
		07/26/00	11-288940	Japan			Yes
Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)							
Examiner				Date Considered			

Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw a line through the citation if not in conformance and not considered. Include a copy of this form with the next communication to the applicant

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		12/08/92	5,169,680	Ting et al.			
		02/02/93	5,183,795	Ting et al.			
		10/20/98	5,824,599	Shacham-Diamand et al.			
		11/03/98	5,830,805	Shacham-Diamand et al.			
		04/11/00	6,048,445	Brain			
		03/19/02	6,359,328	Dubin			
Foreign Patent Documents							
Examiner's Initials		Date	Document Number	Country	Class	Sub- Class	Translation
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Examiner's Initials		Date	Document Number	Country	Class	Sub- Class	Translation
		11/15/2001	PCT/US 01/44791	PCT Search Report			
Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)							
		"100 nm wide copper lines made by selective electroless deposition"; Yosi Shacham-Diamand; J. Micromech. Microeng. 1 (1991). pgs.66-732					
		"A Half-Micron Pitch Cu Interconnection Technology"; Kazuyoshi Ueno et al.; 1995 Symposium on VSLI Technology Digest of Technical Papers. pgs. 27-28.					
		"Electroless Metal Deposition From Aqueous Solutions", V.V. Sviridov; Minsk Bielorussian State University; 1987. pgs. 60-85.					
		"Passivation of Copper by Silicide Formation In Dilute Silane", S. Hymes, et al. Conf. Proc. USLI-VII, Materials Research Society ; 1992, pgs. 425-431.					
		"Copper Interconnection with Tungsten Cladding for ULSI"; J.S.H. Cho et al.; ULSI Tech. Symp; 1991; pp. 39-40.					
		C.J. Sambucetti et al."Electroless Deposition of Thin Alloy Layers for Metal Passivation and Solder Barriers. August 31, 1997, Electromechanical Society Proceedings, vol. 97-27, pages 336-345, XP001058382.					
		S.D. Lopatin et al., "Thin Electroless Barrier for Copper Films", Proceedings of the SPIE, SPIE Bellingham, VA, Vol. 3508, 9/23/1998, pages 65-77, XP001058166.					
		H. Honma and M. Noguchi, "Electroless Cobalt Bath-Life Extension" December 1990. Pages 67 - 70.					
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		"Thick Selective Electroless-Plated Cobalt-Nickel Alloy Contacts to CoSi ₂ "; G.E. Georgiou, F. et al. J. Electrochem. Soc., Vol. 138, No. 7, July 1991, pgs. 2061-2069. © The Electrochemical Society, Inc.					
		"Encapsulated Copper Interconnection Devices Using Sidewalls Barriers", Donald S. Gardner et al.; VMIC Conference; June 11-12, 1991, pgs. 99-108.					
		"Planar Copper-Polyimide Back End of the Line Interconnections for ULSI Devices"; B. Luther et al. VMIC Conference; June 8-9, 1993, pgs. 15-21.					
		"Electroless plating of copper at a low pH level", R. Jagannathan et al.: IBM J. Res. Develop. Vol. 37. No. 2: March 1993, pgs. 117-123.					
		"Selective Electroless Metal Deposition for Integrated Circuit Fabrication", Chiu H. Ting et al.; J. Electrochem Soc. Vol. 136, No. 2; Feb. 1989, pgs. 456-461. The Electrochemical Society, Inc.					
		"Selective Electroless Metal Deposition for Via Hole Filling in VLSI Multilevel Interconnection Structures"; Chiu H. Ting et al.; J. Electrochem Soc. Vol. 136, No. 2; Feb. 1989, pgs. 462-465. © The Electrochemical Society, Inc.					
		"Pd/Si plasma immersion ion implantation for selective electroless copper plating on SiO ₂ "; Kiang et al.; Applied Phys. Lett. 60 (22): June 1, 1992, pgs. 2767-2769. The American Institute of Physics.					
		"Selective electroless Ni deposition on a TiW underlayer for integrated circuit fabrication"; V.M. Dubin et al.; Thin Solid Films, 226 (1993), pgs. 87-93.					
		"Copper Corrosion With and Without Inhibitors"; V. Brusica et al.; J. Electrochem. Soc. Vol. 138, No. 8, August 1991, pgs. 2253-2259. © The Electrochemical Society, Inc.					
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Examiner's Initials		Date	Document Number	Country	Class	Sub- Class	Translation
		7/26/2000	EP 1022770A2	European			
		07/26/00	EP 1022770A3	European			
Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)							
		"Electroless Cu for VLSI"; James S.H. Cho et al.; MRS Bulletin/ June 1993, pgs. 31-38.					
		"Electroless Copper Deposition on Metals and Metal Silicides"; Cecilia Y. Mak; MRS Bulletin/August 1994, pgs. 55-62.					
		"Selective and Blanket Electroless Cu Plating Initiated By Contact Displacement For Deep Submicron Via Contact Filling"; Dubin et al.; VMIC Conf.; June 27-29, 1995, pgs. 315-321.					
		"035 um Cu-Filled Via Holes By Blanket Deposited Electroless Copper On Sputtered Seed Layer"; Yosi Shacham-Diamond et al.; VMIC Conf. ; June 27-29, 1995, pgs. 334-336.					
		"Barriers Against Copper Diffusion into Silicon and Drift Through Silicon Dioxide"; Shi-Qing Wang; MRS Bulletin/August 1994, pgs. 30-40.					
		"Inlaid Copper Multilevel Interconnections Using Planarization by Chemical-Mechanical Polishing"; S.P. Murarka et al.; MRS Bulletin/June 1993, pgs. 46-51.					
		"Electrochemically Deposited Diffusion Barriers"; M. Paunovic; et al. J. Electrochem, Soc., Vol. 141, No.7; July 1994, pgs. 1843-1850.© The Electrochemical Society, Inc.					
		"Electroless Copper Deposition For Multilevel Metallization"; S.Simon Wong et al.; Mat. Res. Soc. Symp. Proc. Vol. 203; 1991 Materials Research Society, pgs. 347-356.					
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